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The internationalisation of production systems: embeddedness, openness and governance

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The paper explores the process of production internationalisation of local production systems with a special concern for the tension between embeddedness and openness, and with the governance structure of international networking. Local production systems are prompted to look beyond their local borders by the need to access knowledge, competences, as well as goods and services. Beyond a concern with territory, the possibility of multinational networks has been conceptualised as a mesh of local production systems cemented by production and socioeconomic relations. Drawing on the conceptual hypothesis of multinational networks, the paper proceeds to analyse the process of international outsourcing of Italian industrial districts as an application. The opening up of districts has taken place at the same time as a process of internal hierarchisation due to the emergence of leading groups. The paper reflects on how industrial districts have tended to generate abroad similar forms of agglomerations replicating the industrial district model, as well as presenting some preliminary considerations on the link between the governance of the local production system and the governance of its external networks.

Keywords: local production systems; governance; embeddedness; international networking; industrial districts.

1. Introduction

The competitiveness of local production systems depends more and more on their ability to combine embedded and local assets with international sourcing and outsourcing. This means exploiting the economies generated by co-location and embedded competencies, whilst having permeable borders. The internationalisation and openness of local production systems means the development of strong bridging relationships across systems and across localities, even if this might risk undermining the solidity of the intra-systemic bonding relationships, especially when systems rest on strong and embedded socioeconomic linkages imbued with trust. Such processes of internationalisation have raised crucial issues with respect to the dynamics and compatibility of local and global ‘pipelines’ of goods, services and knowledge, as well as to the governance of such networks Isaksen (2005) and Oinas and Lagendijk (2005). This paper opens this special issue by conceptualising international networks of local systems, theorising forms of governance and providing a reflection on the specific case study of the internationalisation of industrial districts in Veneto, Italy. As scholars witness the internationalisation of clusters and industrial districts, a debate

on the challenges and opportunities emerging is also in this journal, see for instance, Britton (2004), Nadvi and Halder (2005) and De Martino *et al.* (2006).

We consider the possibility for local production systems to establish production relations with actors outside their locality, and in particular to create multinational networks of production systems (see, for instance Sugden 1997, Cowling and Sugden 1999).

The conceptualisation of multinational networks must not be read as a sign of the failure of a model of local development based on localised competencies, specialisation and embeddedness. On the contrary, it provides an opportunity to expand such a model to envisage a form of cross-locality networking that is able to offer firms the possibility of acquiring knowledge, competences and resources from beyond their spatial proximity. We would argue that crucial characteristics of multinational networks would include the presence of a democratic and heterarchical governance structure, rooted in dimensions of proximity different from the common geographical one, and the development of relational processes that can replicate appropriate forms of social capital. As networks of mutual dependence,¹ multinational networks are defined as alternative production networks to multinational enterprises, especially in the form of governance they embody.

Drawing on the conceptual hypothesis of multinational networks, the paper proceeds to analyse the process of production internationalisation of Italian industrial districts. It seems appropriate to look at the process of international outsourcing of Italian industrial districts, since it has always been argued that their main strength lied in the tight link between locality, production activities and social community, and therefore in the high degree of embeddedness of socioeconomic linkages. The historical structure of Italian districts has undergone dramatic changes: on the one hand, some production functions have been uprooted from the district and shifted abroad; on the other side, and somehow in parallel to this, the governance inside districts has become more hierarchical with the emergence of groups. For this, it was thought that Italian industrial districts could be presented as an interesting case study.

The paper will proceed as follows: section 2 will discuss the constraints of embeddedness when associated with geographical proximity and attempts to broaden the concept beyond its geographical connotation. Section 3 introduces the concept of governance and distinguishes different types of networks according to their governance. Section 4 introduces the concept of multinational network. Section 5 presents some empirical evidence on the internationalisation of firms in Italian industrial districts. Some concluding remarks will close the paper.

2. Embeddedness vs. openness

The current debate on local production systems has generated a multiplicity of definitions and labels. Consider, for example, Martin and Sunley (2003) on the chaos surrounding the use of the term 'cluster'. Despite disagreements on the meaning(s) of the concept(s), there seems to be an accepted consensus on the potential for firms in local systems to be engines of local development and competitiveness.

It is well accepted that the likely advantages enjoyed by firms in local production systems and responsible for a locality's competitiveness can be summed up as follows: (a) external economies associated with production specialisation and the vertical

integration of complementary production phases; (b) incremental innovation based on processes of learning and tacit knowledge;² (c) inter-firm linkages facilitated by trust and social relations that develop in parallel with purely production transactions; and lastly, (d) the intricate fabric of economic and social relationships that are established in a social context – a recognised and shared set of behavioural norms, customs and values – which generates social capital.³ The competitiveness of firms, localities and regions is claimed, therefore, to rest on the characteristics, structures and dynamics of production processes that are embedded within the local system. In other words, whilst geographical proximity is able to generate economic efficiencies (agglomeration, location and external economies), the blend of social, cultural and economic factors engender trust-based and informal relations. For instance, the definition of Marshallian industrial district in Becattini's work⁴ has always underlined the strong link between the place, the industrial specialisation and the community of people. These three elements are inseparable because intertwined. Other subsequent definitions, including Porter's clusters and innovative milieux, have also underlined the importance of the co-location of firms and institutions.

It is unclear, however, how it is possible for firms in local production systems to gain or maintain their competitiveness by means of location-specific endowments only, when other big players in the global economy, such as multinational enterprises, derive their competitiveness from being multi-located. Notwithstanding this, a stream of the existing literature on local production systems has long suggested that it is inconceivable for production systems to be thought of as self-contained boxes. Camagni (1991) argues, for instance, that local milieux need to be linked to the global network to avoid an 'entropic death'. Amin and Thrift argue that clusters of locally embedded firms can be seen as 'neo-Marshallian nodes in global networks' (1992: 577) since they can be different sorts of catalysing points in a given industry. Also, Gilly and Torre (2000) suggest that localities are not necessarily the 'dominant cradle' of competitiveness.

The pivotal role of *geographical* proximity for the emergence of local systems' economies and synergies has gathered support as well as critique. There is, however, an increasingly lively debate about *forms* of proximity *besides* geographical. Boschma (2005a, b) distinguishes five forms of proximity in the existing literature: cognitive, organisational, social, institutional and geographical. Their aim is to reduce uncertainty; provide a solution to the problem of coordination; influence innovation and learning. Other proximity dimensions have been suggested in Gilly and Torre (1998) and Gilly and Yung (2004). Sacchetti and Sugden (2005a, b) introduce the concept of mental proximity as a dimension of proximity that takes place when actors share a concern with public interests in their activities, and are able to contribute to strategic decision-making processes that serve public and not merely private interests.

We would, therefore, suggest moving away from limiting distance only to geographical space and instead consider all the dimensions that distance, hence proximity, can have. This also means going back to Granovetter's original definition of embeddedness, where he stresses

the role of concrete personal relations and structures (or networks) of such relations in generating trust and discouraging malfeasance. The widespread preference for transacting with individuals of known reputation implies that few are actually content to rely on either generalised morality or institutional arrangements to guard against trouble. (Granovetter 1985: 490)

In his words there is no mention of embeddedness being associated with geographical nearness. So, why should embeddedness be only associated with co-location? For example, can mentally close firms be embedded? In other words, we could say that 'the closer the better' (Lagendijk and Oinas, 2005) but, not necessarily 'the nearer the better'. Mental proximity, cognitive proximity or organisational proximity can in fact create different environments where firms find themselves sharing common values, norms, aims and objectives even when located in different places. Once established, these inter-firm networks can develop and strengthen as common patterns of behaviour, common practises and routines together with informal communications emerge, creating a space that is underpinned by some form of proximity and where firms can embed themselves.

The need to explore dimensions of proximity different from the spatial one, is in line with the responses that firms and local production systems are formulating to face the new competitive environment. In the post-Fordist period, local systems were competitive when they produced locally and sold globally, as they faced rigid, vertically integrated large firms as competitors. The competitive environment has dramatically changed and competitors can be now very different actors: they are agile, flexible, modular multi-plant and multinational firms. The globalisation of markets has paved the way to the globalisation of production processes; and, in this respect, globalisation has posed not only threats but it has also offered opportunities. The latter have been reaped by multinational firms which, depending on their needs, have spread their production activities across various localities worldwide.

The competitive advantages of local production systems have been, on the other hand, location-specific, in that production specialisation, trust, the acquisition of knowledge, learning and social capital are all rooted in the local system and are specific to the system itself. It is becoming increasingly frequent, however, to witness small and medium-sized firms reaching out beyond their locality and engaging in activities that can range from outsourcing, to subcontracting and, finally, investment abroad. These processes tend to be driven by the very similar factors that motivate multinational firms, namely: (a) the search for new competences and technologies, (b) access to foreign new markets, and (c) access to lower production costs, often labour.

However, whilst a multinational enterprise is a network of companies under the same ownership that has its headquarter in one country and functional activities in firms located in one or more countries according to factors' endowments and costs, we would advocate a different form of international networking for small and medium-sized firms and local systems, one that is not centralised and controlled by a parent company but multi-polar and inclusive. The reason for this is that the process of international sourcing of foreign firms is uniquely driven by the needs of the parent company which ultimately decides the geographical distribution of activities; this means that localities are seen for what they can offer, for what can be extracted from them. In this view, production internationalisation is pursued to enhance the competitiveness of the multinational firm itself with very little concern, if any at all, for the induced development or welfare of the host localities. On the other hand, we would envisage a process of production internationalisation of local production systems that enables firms in different locations to benefit from cross-system exchanges on the basis of complementarities and mutual interdependences. This means that

home and host localities can all reap the benefits of such an opening process, and see their competitiveness enhanced.

3. The governance of networking

Our concern with the governance of networks of production activities (and the related differences between multinational enterprises and other forms), derives from a broader concern with the governance of inter-firm networking within local production systems, that is the distribution of decision-making powers across firms and other local stakeholders. Governance in these local systems can range from hierarchy, like in monopsonistic clusters (De Propriis, 2001) to heterarchy (Amin and Cohendet, 2005), like in Marshallian industrial districts. In the former, one or a few firms (buyers) act as catalysts of the production network and, as such, concentrate decision making power in their hands at the expense of suppliers and subcontractors (for example imposing on suppliers, for instance, standards, deadlines and prices). Drawing on Amin and Cohendet (2005), we would define a heterarchical system as one where the network of inter-firm relationships is such that decision making power is decentralised and shared more evenly across firms, as there is not one central decision making hub in the production network but several.

Since inter-firm relationships in local production systems take the form of networks (in this case intra-systemic networks), more broadly Sacchetti and Sugden (2003) identify two extreme types of network governance: 'networks of direction' and 'networks of mutual dependence'. Between these two, there can be intermediate governance forms according to the distribution of decision-making powers across parties.

'Networks of direction' are characterised by asymmetry, authority, command and control; in that the core firm(s) exercises its power over satellite firms, pursuing its own aims and strategies and imposing its decisions on the satellite firms. Illustrations of this approach are provided by experiences of pyramidal subcontracting relations in the automobile industry (see Grabher 1993 for a review).

The network of direction enables the core firm to benefit entirely from the network's activities, whilst the shared benefits across the network can be minimal. This generates some concerns. Firstly, the core and the satellite firms are clearly positioned one against the other within a hierarchical structure, such that the basis of inter-firm relationships is control rather than cooperation or mutuality. Also, power and dependence replaces a cooperative form of trust as an enforcing mechanism underlying transactions. Secondly, there are no relationships between satellite firms except for competition on prices and time. Thirdly, the general lack of cooperation, information, and knowledge sharing impedes any innovation and creativity, which is in fact not required given that the satellite firms are simply executors of very simple tasks and easily replaceable.

The contribution of a network of direction to a locality is debatable. If one considers for instance local systems that emerge from inward investment, these are likely to be networks of suppliers similar to networks of direction, whereby the multinational firm tends to be the main buyer and local firms its suppliers. Studies have found that the development (and survival) of these systems is quite precarious, since it depends on the presence of an multinational firm that is completely footloose; indeed, when the economic conditions change against its own interest nothing stops it

from deciding to restructure, relocate, sell or close plants down (in the Irish case, see Görg and Strobl 2003). Its uprooting can, however, leave the local production system hollow, with job losses being the most immediate result. Well known examples include the BMW-Rover case in the West Midlands (Bailey 2003), the restructuring of Electrolux (650 jobs lost in the region), Black and Decker in Sedgefield (Pyke and Tomaney 1999) and the closure of the Motorola mobile phone plant in West Lothian in Scotland, in 2001, cost the region 3000 jobs.

On the other hand, ‘networks of mutual dependence’ are rooted in what Grabher (1993) and Håkansson and Johanson (1993) call the ‘mutual framing of decisions’; there is a symmetrical shaping of strategic direction based upon shared responsibilities. This model is linked to Powell (1990: 303), for whom the parties in a network ‘agree to forego the right to pursue their own interests at the expense of others’, implying that, as a consequence, actions are ‘reciprocal’ and ‘mutually supportive’. It is consistent with some (although certainly not all) experiences in Marshallian industrial districts. For instance, see Brusco 1990 on strategic choice in Italian districts in the mid-1970s; also Semlinger (1991) on districts active and versatile small firms, contrasting with their passive and pliable counterparts in certain hierarchical networks.

4. From local production systems to multinational networks

The analysis of the networks of mutual dependence is part of a wider economics literature grounded in a governance perspective on the theory of the firm, more specifically in an understanding of which people determine firms’ strategic directions (Cowling and Sugden 1998). Literature on this strategic decision-making approach to production activity relates the development of economies to different governance processes. It has been argued that the fundamental economic development problem facing many localities is strategic failure (Cowling and Sugden 1999): the tendency for strategic decision-making power to be concentrated in the hands of exclusive interests, implying strategic choices made in the interests of a few rather than of people more generally. Such strategic failure can take place in networks of direction embedded in the same locality (as in the case of monopsonistic clusters) but, more worryingly, it can be observed in networks that cross localities. In fact, a typical example of a network of direction is the multinational firm, whose parent company is not only at the centre of a network of production relationships but of a network that reflects a hierarchy of localities (Hymer 1975). In fact, if we expand the concept of network of direction to a transnational dimension, like the one embraced by multinational firms, we can see that rather than having a simple ‘hub-and-spoke’ network,⁵ we could be in the presence of a kind of ‘solar system’ where different localities have different functions. Here the rings around the centre confer a hierarchical order to the system.

Our conceptual hypothesis is that multinational networks⁶ should take the form of international networks of mutual dependence where firms and production systems can engage in production outsourcing, sub-contracting or cooperation on the basis of complementarities and mutual interdependencies.

Multinational firms often embrace transnationality and develop a network of firms that has a transverse structure that from the parent company’s locality spans across countries careless of geographical borders. Usually the culture and values of the parent company are imposed on the satellite firms/subsidiaries in order to create an overarching ‘corporate culture’ that is different from the unique cultures of each

locality. Here, the homogeneity of the system is favoured over its complexity. On the other hand, we would envisage, multinational networks to reflect *multinationality*. This refers to a coming together of different actors across nations to identify and pursue desirable ways forward, respecting and drawing on different experiences, histories, traditions, cultures and competencies. The combination and integration of diverse and heterogeneous elements has been suggested to increase, for instance, innovation performance (Lundvall, 1992) and creativity (Florida 2002).⁷ In general, complexity enables leaps, discontinuity and is able to deal with flexible environments. A multinational perspective is in stark contrast to the trans-nationalism and the imposition, for instance, of the corporate culture of the parent company to all subsidiaries.

Beyond a concern with territory, the possibility of multinational networks has been explicitly identified with a set of inter-related characteristics, based partly on a response to the strategic failures of transnational corporations. Multinational networks can be conceptualised as a mesh of local production systems cemented by production and economic relations (see Figure 1 below). Local production systems are prompted to bond by the necessity to exchange knowledge and information and to reach areas of specific competence. Unlike the networks of direction that characterise multinational firms (Markusen 1996, De Propriis 2001), multinational networks are seen to be founded on horizontal and symmetrical relationships across parties, and are regulated by different forms of trust and reciprocity. In other words, they reflect, on a macro level, inter-firm relationships within local systems, namely intra-systemic relationships. The relevance of the multinational networks concept is that it provides a point of reference with respect to networking, governance structure and democracy. Its conceptual hypothesis is that we can look at various forms of international networking and compare them with it as a reference point.

The following section will look at the process of international sourcing of Italian industrial districts as an application, in order to see to what extent the concept of multinational networks can be used in practise to analyse and evaluate ongoing processes of production internationalisation.

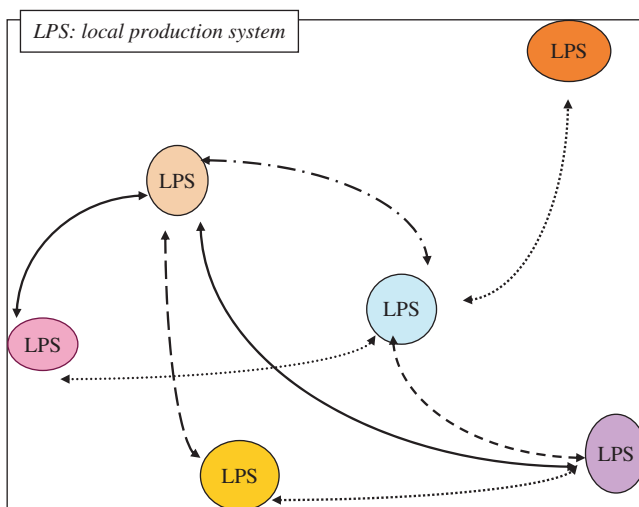


Figure 1. Multinational network.

5. Governance and openness in Italian industrial districts

5.1 Trends and drivers

The decline of large national champions in Italy at the turn of the 1980s was compensated by the ever more evident importance of small firms and industrial districts. Both had been present in the Italian economy since the 1970s, but were until then completely dwarfed by the national champions. As small firms and IDs become the drivers of Italian competitiveness, the congenital 'dwarfism' (Onida 2004) of the Italian production structure started to be appreciated as an asset, rather than a liability. In particular, as the 'made in Italy' label became synonymous with high value added, innovative and branded products to be sold globally, the industrial district started to be appreciated worldwide.

Becattini (1990) defines a Marshallian industrial district as 'a socio- territorial entity characterised by the active presence of a group of persons and a population of firms in a given historical and geographical dimension' (Becattini 1990: 38); a system of activities where the knowledge of a locality is embedded in its people and the network of socioeconomic relationships. Marshallian industrial districts embody a complex and articulate web of inter-firm relationships that span from production across complementary and integrated production activities to social interactions. The complexity and thickness of the local fabric of socioeconomic linkages generate processes of decision making that are flat and heterarchical, in that there is not one centre of decision making but firms individually and independently decide on their strategic choices.

The competitiveness of Italian industrial districts was reflected in the internationalisation of their final markets through exports. Menghinello (2004) provides convincing evidence that, in specific niche markets, individual industrial districts can account for as much as two thirds of world exports, as in the case of the ceramic tile district in Sassuolo (Emilia Romagna). The attitude of firms in industrial districts was to produce locally to sell globally and, in line with this, they tried to resist the prospect of 'using organisational, managerial and financial resources to promote the transfer of their manufacturing capability to a distant and different environment' (Mariotti and Mutinelli 2004: 338). For a long time, this stance had prevented districts from engaging in the internationalisation of production activities. The main reason for this is that their competitive advantage coincided with localised knowledge and competences, and with the cosy environment in which socioeconomic relationships were embedded. This has enabled inter-firm personal relationships, limited exposure to risk and uncertainty with respect to partners, and a cumulative process of learning and success that consolidates practises and 'ways of doing things'.

Embeddedness can, however, lead to path-dependency and lock in, major drawbacks for district dynamism. If the latter have benefited from globalisation as exporters, it has become more and more difficult for them to isolate themselves from the globalisation of production activities and the globalisation of knowledge flows.

The challenges posed by the new competitive environment in the 1980s triggered a process of deep change in the internal structure of industrial districts: increasing the relevance of medium-sized firms and the formation of strategic groups (Alzona and Iacobucci 2005).⁸ The success of IDs in the 1990s meant that firms naturally grew bigger, contributing to create a healthy and dynamic layer of medium-sized firms which, because of their bigger size found themselves better equipped to face

competition domestically and abroad. Some of these, in particular, became leaders in specific markets and strove for further growth, which was this time pursued externally via acquisitions. The outcome was the creation of groups.⁹ In fact, the search for and retention of competitive positions meant constant upgrading, thereby investment in innovation, design, branding and marketing: all activities with great economies of scale and which required better control over the value chain. (Cainelli *et al.* 2006). Alzona and Iacobucci (2005) argue that groups have also emerged in IDs because of firms need to grow in size (albeit externally), in order to have stronger financial and managerial assets to be relied on for the internationalisation of production activities. In general, groups in industrial districts tend to remain intra-district and to concentrate around core activities in an attempt to control the production filière (vertical groups) or broader markets (horizontal groups). It has been argued that groups can be able to combine production flexibility and localised embedded specialisation with a stronger structure to open up beyond the district confines, somehow overcoming the dwarfism of the Italian firm sector (Cainelli and Iacobucci 2005). The same authors warn that as the activities of industrial districts are increasingly pivoting around groups, the result is an ongoing process of hierarchisation of inter-firm power relations, which could alter the functioning of agglomeration economies, as production exchanges become intra-group rather than driven by co-location, complementarities and mutual dependence. Some have argued, however, that only the emergence of such 'pillars' and 'columns' (Fortis 2004) can take some districts out of the current deadlock that is causing loss of competitiveness and market shares.

In our view, the emergence of groups has altered both the system of division of labour and the governance structure within districts. If, before the emergence of groups, the dispersion of the decision-making power was underpinned by the fabric of networks of mutual dependence associated with production exchanges, with groups, such exchanges can take place either through preferential intra-group circuits or not. Groups become focal points and, therefore, key buyers in the local system, and as such detain a significant amount of power with respect to subcontractors inside and outside the groups. Paradoxically, in this context, subcontractors outside the groups might find themselves with the least bargaining power. In other words, industrial districts seem to now comprise a mix of networks of mutual dependence and networks of direction. Therefore, the governance structure has changed from being flat and heterarchical to be more concentrated in the hands of fewer actors: the groups, in fact.

It is unclear if the process of hierarchisation in industrial districts has been cause or effect of the parallel process of production internationalisation, clearly though groups have been by far the most pro-active in shifting production abroad (Bagella and Becchetti 2000, Mariotti and Mutinelli 2004). Since the early 1990s, the process of internationalisation of IDs has moved beyond exports to involve production. The process has been gradual and cumulative. Three things have increasingly forced districts to look beyond their localities: (a) search for lower labour costs, (b) access to technology and (c) the possibility to supply known or new markets with *in situ* production capabilities. Of these, the first one has dominated the phenomenon over the last decade (Mariotti *et al.* 2005).

In some respect, the process of international sourcing of district firms has not happened in isolation but has followed some kind of pattern: for instance, firms within the same industrial district have shifted production to the same destination (see Mariotti *et al.* 2003, Tattara 2005 for relocations to Eastern Europe and Romania, in

particular; and Sammara and Belussi 2006). Also the timing and the sequencing of the process has been the same in the same districts whilst it has differed across them.

We would argue that the process of internationalisation has been gradual coinciding with a process of learning and adapting. Conti and Menghinello (1998) describe this process as three staged: after an initial move to outsource production activities, they engaged in processing trade, and only later committed themselves to the locality a bit more through a foreign investment. In particular, the outsourcing of raw material or intermediate goods has been the very first step to involve foreign partners (suppliers) in the production process: this simply implies the purchase of the unfinished output from a foreign supplier. A further deepening in the process of international outsourcing involved what is called 'processing trade': that is when firms export raw materials to a foreign country, where such materials are processed by foreign firms (subcontractors) to produce intermediate goods that are then re-imported to be finished by firms in the industrial districts. What firms export, the extent of the value that is added abroad and the extent of the value that is added back at home tell us whether the industrial district is de-localising non-core labour intensive production activities or more core activities. When outsourcing and trade processing, district firms rely on external suppliers or subcontractors, and their exposure to risk is still limited since, if at any point relationships break down, either party can just cut the link. The last and more sophisticated form of production internationalisation is through foreign direct investment, either green field or brown field. In this case, the district firm extends its ownership boundaries abroad. This clearly means better control of the production activities de-localised abroad but, at the same time, a more complex organisational and financial investment, as well as a much greater exposure to risk.

Over the last two decades, the relocation¹⁰ of districts' production activities abroad has been mostly driven by cost savings (vertical relocation) and only a very small portion has been motivated by access to technology or markets (Tattara and Crestanello 2003, Majocchi 2004). Vertical relocation has involved traditional sectors like textiles, shoe making, leather and knitwear. These sectors combine knowledge-intensive stages determining the value added of the final output (such as innovation, design and creativity) with more labour intensive stages of 'cutting and sewing'. Industrial districts in traditional sectors have re-located in low labour cost countries relatively close, like Eastern Europe, precisely for the more labour-intensive stages of production (Tattara and Crestanello 2003, Onida 2004). The process of relocation of production activities of districts in Veneto to Romania presented later in this paper sheds light on the links between internationalisation and governance.

It is still too early to assess the impact that the process of international outsourcing will ultimately have on Italian districts, however, we would tentatively formulate some considerations. The first casualty of the outpouring of functions away from them, is likely to be the district 'industrial atmosphere', as the fabric of knowledge and production interdependencies that cement the network of linkages. Given the interconnected nature of the external division of labour within industrial districts, the impact on one of them coming from the shift abroad of production stages varies according to whether the activities shifted abroad are core or non-core (Menghinello, 2004). Core activities are more innovation- and knowledge-intensive and need to be constantly pitched against the technology frontier worldwide. For this reason, districts need to be aware of and have access to advanced technologies associated with core competences, but the way in which this is done has major implications for the value

chain in the district. Whilst, the nourishing of external linkages that bring knowledge into the district is of crucial importance to prevent districts slipping into a technology lock-in trap, the relocation of knowledge or innovation-intensive functions (such as design, R&D) abroad would seriously damage learning and innovation circuits which are the basis for dynamic economies to emerge. The related risk is that of triggering a sort of competence hollowing-out which can not only impoverish the stock of knowledge and skills embedded in the district, but can break down the network of production linkages as some nodes are uprooted from the district. Cooperative forms of knowledge-sourcing would be desirable, useful and valuable and involve foreign partners mostly in advanced countries like Europe and North America.

On the other hand, industrial districts can re-locate abroad low value added activities for cost savings. In this case, destinations tend to be low income countries like Eastern Europe, North Africa and Asia. Districts in traditional sectors have tended to go down this route as table 2 shows. In this case, the impact on the host district can be uncertain. Tattara and Crestanello (2003) suggest that it can benefit from this as the employment of skilled workers could actually go up due to an expansion of the core activities away from labour-intensive functions. Mariotti *et al.* (2003), however, provides evidence of the opposite: they find that, following foreign outward investment, for every additional employee in foreign branches in Eastern Europe, three jobs are lost at home (whereas for every additional employee in foreign branches in advanced economies, seven new jobs are created at home).

The process of international outsourcing of Italian industrial districts differs from that of multinational firms in two ways. Firstly, it involves medium-sized firms which are financially and organisationally not similar to multinational firms (for instance, they might not be listed on the stock market and rely on a bank loan to finance their venture). The relative small size of the 'internationalising' firm means that the scale of the venture is also small: firms are likely to have only one foreign outsourcer or subcontractor often located relatively close (that is, Eastern Europe). Secondly, opening up to international outsourcing can be seen as a learning process both for firms and for the district overall. Indeed, IDs seem to have tended to behave like a collective item, for instance by sequencing their involvement abroad at different levels

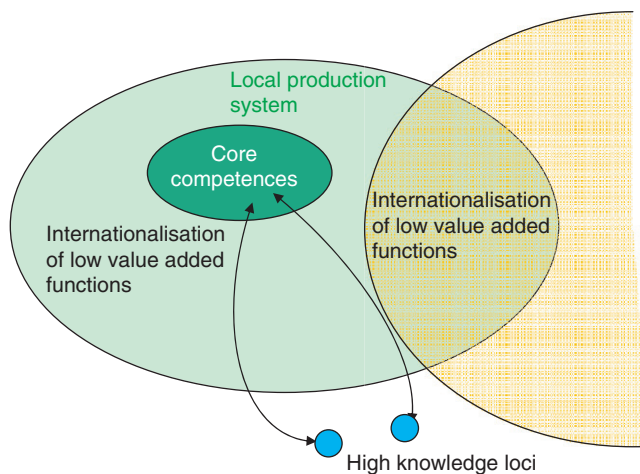


Figure 2. Patterns of internationalisation.

of commitment to reduce risks and uncertainties. On the other hand, although FDI activities can present a band wagon effect, multinational enterprises tend to formulate their location decisions balancing out competition and agglomeration effects, always on the basis of opportunities and needs.

In the application that follows, we attempt to analyse the process of internationalisation of some Italian industrial districts in order to better understand the patterns of its evolution. We also look in more detail at the internationalisation of some of them in Veneto towards Romania.

5.2 Data and methodology

Empirical studies on Italian districts have been traditionally penalised by the poor data at the sub-regional level, with the availability of data on the economic activities of Italian firms abroad being even worse. In particular, studies on the internationalisation of Italian industrial districts are constrained by data in two ways. Firstly, statistical data on the international activities of firms is usually limited to foreign investment, and does not consider forms of international linkages that are not based on ownership, such as cooperation agreements. Foreign direct investment is not, however, the most common immediate way for an industrial district to internationalise their production. An alternative way is to look at processing trade as an alternative type of international linkage; one that is more suitable to districts' international activities since it does not require ownership linkages. Second, statistical data on the international activities of firms is usually available at an aggregated industry level, with a very limited territorial breakdown.

In this paper, we rely on two statistical sources that have become recently available and provide data on foreign investment and processing trade by region and industry: (a) the foreign investment dataset is produced by *Politecnico di Milano-ICE*; (b) data on processing trade is available from the Italian statistical office (ISTAT) as part of foreign trade statistics. Both sources provide regional data at the two digit level of NACE classification.¹¹

Regions are remarkably larger than industrial districts and have borders that do not necessarily overlap with the administrative regional ones. Therefore, regional data can be a good proxy for information at the district level only in a limited number of cases. In order to assess the relevance of the regional dimension as a proxy of industrial districts, we have measured the degree of industrial district-intensity of regional industries.

The degree of district-intensity of a given regional industry is simply defined as the share of district-related employment over total regional employment, where the district-related employment is given by the number of employees in an industrial district within each region:

$$\frac{empl_{ij}^{district}}{empl_{ij}^{total}}$$

where i and j indicates industry and region respectively.

A 75% threshold is adopted to identify district-intensive regional industries. This is based on the assumption that when more than two-thirds of the employment of a regional industry is located in one or more industrial district, data on that regional

industry can be used as a good proxy for the district located in that region. In order to calculate this indicator a very detailed dataset on employment has been used. This data set includes figures on employment broken down jointly by 784 local labour markets and two digit NACE industry classification for a total of 20 industries. Local labour markets are officially defined by ISTAT as self-contained labour markets and they are identified by using a regionalisation algorithm that process information on resident population travel to work commuting patterns (ISTAT 1997). This is argued to be more appropriate for the analysis of local economies than administrative units of analysis, and they have in fact been used to map industrial districts, for instance, in Italy and the UK (see Sforzi 1990, ISTAT 1997, De Propris 2005). As a result, the degree of district-intensity can be quantitatively assessed for each combination of region and industry.¹²

5.3 *The trend: from processing trade to foreign outward investment*

The empirical analysis focuses on 31 regional industries for which a significant degree of district-intensity was detected. We find that the relevant industries include: textiles (NACE code 17); wearing apparel (18); tanning and dressing of leather; footwear (19); manufacture of other non-metallic mineral products (26); and manufacture of furniture; jewellery, toys and sport apparel (36). These are traditional 'Made in Italy' sectors. The Italian regions that have one or more ID-intense industries are Marche, Veneto, Lombardia, Toscana, Emilia Romagna and Abruzzo.

In particular, we are interested in looking at the international linkages of industrial districts. To do this we consider outward processing trade and outward investment from Italian district-intensive regional industries toward foreign countries. While foreign investment represents for large firms the most common way to re-locate production abroad, the use of this for data on smaller firms may considerably underestimate the magnitude of their production internationalisation. Small and medium-sized firms usually prefer more flexible channels, such as the reliance on intermediate inputs produced by foreign firms and therefore sourced abroad (Conti and Menghinello 1998). Within this context, processing trade represents a peculiar kind of supply contract that is based on a two-way trade exchange: the Italian firms temporarily send abroad (export) a semi-processed product to foreign firms to be transformed and then subsequently to be re-imported.¹³

The reliance of Italian district-intensive industries on processing sharply increased in the 1990s but started to decline in the early 2000s (see table 1). In particular, processing trade increased more sharply with respect to low wage destinations, confirming that for traditional district-intensive industries, internationalisation has been driven by cost savings more than by knowledge sourcing. The decline of processing trade in the early 2000s has been compensated by an increase in outward investment: suggesting that firms have been switching to more committed and structured strategies of production internationalisation, in particular, in Central and Eastern Europe. Table 2 shows the annual growth of processing trade between 1993 and 2003 by region and district-intensive regional sectors. Processing trade has considerably risen over the period especially in Central and Eastern Europe countries. This is particularly evident for district-intensive regions specialised in traditional sectors, such as in the Marche and Veneto regions (table 3).

Table 1. Italian outward processing trade by ID-intensive industries (1995–2003).*(Annual growth rate in % of processing trade by volume)*

Years	Exports				Imports			
	Central-Eastern Europe	Northern Africa	South-East Asia	TOTAL	Central-Eastern Europe	Northern Africa	South-East Asia	TOTAL
Manufacture of furniture; jewellery and sport apparel								
1995	22.4	79.6	479.8	24.2	38.7	71.4	382.4	37.8
1997	23.2	525.8	−39.4	21.8	29.7	812.8	−24.0	28.8
1999	−19.8	−48.8	55.3	−19.7	−20.8	−49.6	157.4	−18.8
2001	21.3	97.2	42.1	20.6	25.5	2984.6	3.3	22.1
2003	−5.4	−24.2	−4.3	−5.7	−9.9	−48.5	18.1	−8.6
Tanning and dressing of leather; manufacture of footwear								
1995	26.1	−34.2	575.7	29.0	32.2	432.1	973.8	33.8
1997	8.1	296.6	76.3	7.2	21.4	−11.8	5.8	22.4
1999	73.3	−18.5	2.7	74.1	57.6	−34.5	33.7	58.2
2001	−1.9	−40.7	11.0	−2.9	5.8	92.5	50.5	6.0
2003	−8.3	60.0	35.4	−8.6	−7.3	−34.4	2.3	−8.1
Manufacture of textiles and wearing apparel								
1997	22.0	184.8	21.4	20.2	15.9	194.4	23.8	15.2
1999	4.3	−28.4	4.2	3.8	0.9	−22.5	8.7	0.9
2001	3.2	0.2	−10.8	4.3	4.4	−11.1	−1.5	5.6
2003	−10.0	31.0	−21.3	−7.4	−13.6	41.3	−17.7	−10.8

Source: Foreign trade statistics, ISTAT.

The Italian manufacturing sector is traditionally characterised by a very limited degree of internationalisation of its production *filières*, especially in traditional and district-intensive industries. As already mentioned, more recently, production internationalisation has significantly impacted on traditional industries, such as textiles, leather or accessories. Over the period 1999–2003, the number of employees working abroad in Italian-participated companies has increased by more than 30% in traditional industries, a rate of growth that is double that registered for the manufacturing sector as a whole (table 4).

Although the extent of districts production internationalisation tends to vary across regions and industries, so that for instance, in Tuscany and Marche they seem to re-locate abroad to a much lesser extent than they do in Veneto, Lombardia and Emilia-Romagna. The data seems to suggest that groups in districts act as catalysts for the internationalisation process of medium-sized firms. In fact, the degree of production internationalisation of district-intensive regional industries (measured by the share of foreign over national employment) is in some industries, such as textiles and wearing apparels, higher than the national average (table 5).

Also, the geographical distribution of foreign employment for district-intensive regional industries shows different patterns of internationalisation (see table 6). Central and Eastern European countries represent the most popular destinations for outward investment for the industrial districts specialised in the manufacture of wearing apparels in Lombardia; for the tanning/dressing of leather and footwear districts in Veneto and Marche; and, finally, for the textiles districts in Veneto. Africa is a destination for outward investment across all industrial districts in the manufacture of textiles and wearing apparels, while South East Asia is an important destination of production delocalisation for furniture, jewellery and sport apparel

Table 2. Italian outward processing trade for some ID-intensive regional industries 1993–2003.

<i>(Annual growth rate in % of processing trade in volume)</i>						
<i>Regions</i>	<i>Exports</i>			<i>Imports</i>		
	<i>Manufacture of furniture; jewellery and sport apparel</i>	<i>Leather tanning & dress- ing; manufacture of footwear</i>	<i>Manufacture of textiles & wearing apparel</i>	<i>Manufacture of furniture; jewellery and sport apparel</i>	<i>Leather tanning & dress- ing; manufacture of footwear</i>	<i>Manufacture of textiles & wearing apparel</i>
TOTAL						
Lombardia	14	103	15	24	115	10
Veneto	-7	32	20	-7	45	19
Emilia Romagna	-7	66	4	1	338	4
Toscana	-9	103	10	123	127	15
Marche	-4	-2	165	-4	1	275
Abruzzo	-9	19	6	-9	11	9
Central-Eastern Europe						
Lombardia	14	117	10	25	118	7
Veneto	-8	33	17	-8	45	14
E-R	-8	50	4	-1	215	5
Toscana	-10	85	11	0	63	12
Marche	-5	-2	166	-6	1	285
Abruzzo	-9	19	9	-9	11	16

Table 3. Geographical breakdown of Italian outward processing trade by some ID-intensive regional industries of Marche and Veneto 2003.

(composition in % by regional industry)

	<i>Exports</i>					<i>Imports</i>				
	<i>Northern Africa</i>	<i>South- East Asia</i>	<i>Central- Eastern Europe</i>	<i>Other areas</i>	<i>World</i>	<i>Northern Africa</i>	<i>South- East Asia</i>	<i>Central- Eastern Europe</i>	<i>Other areas</i>	<i>World</i>
Manufacture of furniture; jewellery and sport apparel										
Marche	0.0	0.0	68.9	31.1	100.0	0.0	9.2	59.3	31.5	100.0
Veneto	0.4	0.1	70.4	29.2	100.0	0.0	18.4	73.8	7.8	100.0
Tanning and dressing of leather; manufacture of footwear										
Marche	0.0	0.0	99.9	0.0	100.0	0.0	0.0	99.6	0.4	100.0
Veneto	0.0	0.0	99.2	0.8	100.0	0.0	0.0	99.4	0.6	100.0
Manufacture of textiles and wearing apparel										
Marche	0.0	0.0	99.8	0.1	100.0	0.1	0.0	99.7	0.2	100.0
Veneto	1.1	0.7	86.3	11.9	100.0	3.5	0.9	77.8	17.8	100.0

Source: Foreign trade statistics, ISTAT.

Table 4. Italian outward FDI by ID-intensive industries 1999–2003.

<i>ID-intensive industries</i>	<i>Number of employees abroad</i>		
	<i>1999</i>	<i>2003</i>	<i>Growth rate in % (1999–2003)</i>
Manufacture of furniture; jewellery and sport apparel	9,824	15,379	56.5
Tanning and dressing of leather; manufacture of footwear	25,728	28,393	10.4
Manufacture of other non-metallic mineral products	33,938	68,164	100.8
Manufacture of textiles	39,773	46,737	17.5
Manufacture of wearing apparel	54,393	57,605	5.9
Total ID-intensive industries	163,656	216,278	32.2
Total manufacturing	758,992	873,762	15.1
Share of ID-intensive industries over total manufacturing (%)	21.6	24.8	

Source: Banca dati Reprint, Politecnico di Milano – ICE.

industries in Marche and the tanning/dressing of leather and footwear industries in Lombardia.

5.4 The link between Veneto and Romania

Veneto is one of the main district-intensive regions in traditional sectors: it accounts for almost 12 of Italy's value added and for 15% of Italy's exports. Over the last two decades, firms have been increasingly re-locating low value added activities to Romania, especially in textiles, clothing and shoe manufacturing sectors. The relocation has been driven by cost savings and has proceeded through the already

Table 5. Italian outward FDI by ID-intensive regional industries 2003.

<i>Regions</i>	<i>Share (%) of foreign over national employment</i>
	Manufacture of furniture; jewellery and sport apparel
National average	5.1
Lombardia	4.9
Marche	3.3
Veneto	2.0
	Tanning and dressing of leather; manufacture of footwear
Veneto	30.3
Lombardia	21.0
National average	13.8
Marche	11.0
	Manufacture of other non-metallic mineral products
National average	26.9
Emilia-Romagna	20.5
Marche	1.2
	Manufacture of textiles
Veneto	31.7
Lombardia	19.4
Emilia-Romagna	17.8
National average	15.1
Toscana	2.1
Marche	0.0
	Manufacture of wearing apparel
Lombardia	35.0
Veneto	28.0
National average	19.3
Marche	8.2

Source: Banca dati Reprint, Politecnico di Milano – ICE.

Table 6. Geographical distribution of foreign employment in ID-intensive regional industries 2003.

<i>Regions</i>	<i>EU 15</i>	<i>Central-Eastern Europe</i>	<i>Africa</i>	<i>America</i>	<i>South-East Asia</i>	<i>Other areas</i>	<i>TOTAL</i>
Manufacture of furniture; jewellery and sport apparel							
Veneto	21.0	39.5	0.0	12.4	19.1	8.1	100.0
Lombardia	40.4	13.2	4.4	27.9	3.5	10.5	100.0
Tanning and dressing of leather; manufacture of footwear							
Veneto	6.0	70.5	9.4	1.2	9.8	3.1	100.0
Marche	4.8	82.8	9.6	0.7	1.5	0.6	100.0
Lombardia	20.0	46.0	12.2	4.2	15.2	2.4	100.0
Manufacture of other non-metallic mineral products							
Emilia-Romagna	71.5	1.6	1.3	14.2	0.4	11.0	100.0
Manufacture of textiles							
Veneto	3.5	57.0	20.8	0.5	0.8	17.5	100.0
Lombardia	9.4	34.6	22.9	21.9	5.0	6.1	100.0
Emilia-Romagna	19.1	41.8	28.1	0.0	1.6	9.3	100.0
Manufacture of wearing apparel							
Veneto	33.1	21.7	23.5	3.5	1.2	17.0	100.0
Lombardia	6.1	64.2	18.7	0.2	8.7	2.1	100.0

Source: Banca dati Reprint, Politecnico di Milano – ICE.

Table 7. Agglomeration of regional industries in Romania 2003.*(location quotients calculated on the no. of employees)*

<i>Regions</i>	<i>Furniture; jewellery and sport apparel</i>	<i>Tanning/dressing of leather & footwear</i>	<i>Manuf. other non-metallic mineral products</i>	<i>Textiles</i>	<i>Wearing apparel</i>
Nord-Est	1.1	0.7	0.8	1.4	1.4
Sud-Est	0.6	0.0	0.5	0.4	1.4
Sud	0.6	0.0	1.0	0.7	1.0
Sud-Vest	0.6	0.0	0.8	0.9	0.8
Vest (Timisoara)	0.9	2.0	0.7	0.8	0.9
Nord-Vest	1.7	1.9	1.6	1.3	0.9
Centru	1.3	1.1	1.4	1.2	0.8
Bucuresti	0.7	1.2	0.9	1.0	0.7

Source: Eurostat database, Romania statistics.

mentioned stages: subcontracting, processing trade and, more recently, foreign direct investment (Unioncamere 2005). Since these traditional sectors are the most exposed to incoming competition from China and India, the search for increased competitiveness has led to production and commercial relocation especially in the area of Timisoara in Romania. Table 7 shows the agglomeration of regional industries in Romania (for more detail analysis see, OECD 2005).

There have always been strong historical links between Veneto and the Balkans. Timisoara (Vest), in particular, already had localised skills in the manufacture of leather and clothing and therefore became a natural destination for Veneto's firms. Majocchi (2004) argues that industrial districts in Veneto (for instance, the Montebelluna sport shoes area) are replicating the district model abroad and, in particular, in Timisoara. It is easy to understand why medium firms and groups in districts have one after the other relocated in the same place. For individual district firms, relocating functions abroad can be costly because of the uncertainty and risk of operating in an unknown environment that can be so different from the cosy and supportive net of socioeconomic relationships that they experience at home. The stream of firms that have relocated from Veneto to Timisoara suggests that the solution is not for one firm but for the all system to relocate. Individual firms know of the destination from other firms (reducing searching costs and uncertainty), and they know they will find other firms there that they already know (this enables the continuity and stability of inter-firm relationships). In other words, as district firms are used to function in a context where there is cooperation/competition, interaction, exchange, they feel secure if the systemic model is replicated abroad.

Tattara and Crestanello (2003) argue, however, that the lack of a local business environment had also acted as a driver for Italian firms to relocate not only activities strictly related to leather and shoe manufacturing but all sorts of business services surrounding it, such as banking, finance, trade and logistics. The subcontractors of such ancillary services and of manufacturing intermediary products are often Italian because of the lack of an indigenous supply. The cross-district supply chain is such that raw materials are exported from the Veneto ID to the Timisoara 'district' where either foreign affiliates, or Italian-owned/host subcontractors process the low value added stages (including packaging). Final goods are either re-imported, to be exported to foreign markets, or exported directly from Romania. According to Tattara and

Crestanello (2003), the lack of a local market for intermediate goods means that suppliers and subcontractors are completely at the mercy of buyers.

As suggested in the conceptual hypothesis on network governance, the lack of specific competences and skills can often leave firms in a very weak position with respect to their business partners and buyers as they lack bargaining power due to their substitutability. Therefore, the network of relationships that emerges from the international outsourcing of the Veneto districts in Romania seems to be of direction, since there is an element of control of the district firm over the outsourcer(s). We would also suggest that what is unique about such cross-system network is that it overlaps with the networks of local and embedded relationships and exchanges that are present at either end of the line, namely in Veneto and in Timisoara.

The analysis of the case of Veneto-Timisoara shows three things: (a) district firms (both medium-sized firms and groups) internationalise their production activities very differently from multinational firms, in that they tend to replicate the systemic model abroad; suggesting that firms are aware of the benefits of the usual location/agglomeration/external economies; (b) relocation has coincided with the internationalisation of the value chain with only some functions shifted abroad, this has generated strong socioeconomic cross-district linkages; (c) the governance structure of the cross-district network tends towards a hierarchical form (network of direction) due to the asymmetries of competencies and, therefore, powers across firms.

6. Concluding remarks

This paper has attempted a preliminary discussion of the desirable patterns and outcomes of the internationalisation of local production systems. Recent evidence on the internationalisation of production activities in medium-sized firms in local production systems has drawn our attention to the need to understand the dynamic of such a phenomenon. This is especially relevant given that over the past two decades most of the literature has looked at the localised sources of competitiveness by over-emphasising geographical proximity and localised embeddedness.

Our particular concern is on the governance form of such cross-border networking, stemming from a similar concern with networks and clusters governance. We would argue that the dynamics and functioning of a local production system, as well as its desirability and impact on a locality, depends on the governance of its relationships. In fact, types of governance inform not only about the distribution of decision-making powers across firms (stakeholders) but, also on the competences of firms and their position along the value chain; this in turn determines their capacity to cooperate with and compete against other firms. We would advocate for cross-locality networking to take the form of multinational networks which, as networks of mutual dependence, link together local systems on the basis of their complementarities and mutual interdependence. The governance of multinational networks is flat and heterarchical. Drawing on this conceptual hypothesis we have analysed the process of production internationalisation of Italian industrial districts.

The entry of new competitors in global markets – such as China and India – and to some extent the sluggishness of Western economies (those able to purchase goods at the top end of the market) have eroded the competitive advantage of Italian industrial districts, which had to search for new strengths either by reducing costs and/or increasing the innovation and value added content of their output. In this context,

Italian districts have gone through a deep process of transformation both in terms of their internal hierarchisation with the emergence of groups and their opening to international outsourcing. The two phenomena could be seen as inter-twined as leading groups have played a driving role in the relocation of district functions abroad.

The analysis of the process of internationalisation of Italian industrial districts has shown that it has been a process of learning and adapting. We have provided evidence of how the process has moved from exports, to sub-contracting, to processing trade and only later to foreign investment. Besides, the learning has not been experienced by individual firms, but by districts as a collective identity. In particular, the case of the internationalisation of the leather and shoe districts in Veneto has shown that they are recreating a district-like form in Timisoara (Romania). The band-wagon effect from Veneto to Timisoara has involved not only manufacturing firms but also service firms, so that in Timisoara there is now a mix of indigenous firms as well as a critical mass of Italian firms along the whole value chain. The attempt to replicate district-like forms abroad can be explained by the fact that as district firms are used not only to be co-located (to engage in production exchanges due to specialisation) but to share a socio-cultural environment that bonds them together, they appreciate the same 'atmosphere' abroad.

We would argue that between the industrial districts in Veneto and the agglomeration of firms that is emerging in Timisoara, there is a network of local relationships at each end joined by thick socioeconomic cross-border linkages across the two localities. The shift of Italian industrial districts towards more hierarchical forms of governance whereby leading groups have driven the process of international outsourcing, and have taken strategic decisions that have had an impact on the district overall, has also seeped into the governance of the cross-locality networking they are engaging in. In particular, the network between districts in Veneto and Timisoara is in our view neither a multinational network nor a network of direction, since there is not a unique centre of decision making but, at the same time, there is power asymmetry between the district group and the suppliers abroad. We would argue that such cross-locality network appears to be most likely a combination of networks with different governance forms.

It is not clear whether the relocation of district firms production activities to neighbouring Eastern European countries constitutes an opportunity to maintain a competitive advantage, or the first step towards the breakdown of the system of traded and 'untraded inter-dependencies' that have nourished districts so far. It is far too soon to draw conclusions on this.

This preliminary reflection and application of the conceptual hypothesis of multinational networks has enabled us to push the idea further. These are conceptualised as webs of local production systems where both the international and the local networks are governed by flat and heterarchical relations. In practise the process of building bridging relationships across localities can trigger a governance change towards a more hierarchical form. In other words, the governance structure of a local system is prone to changes as internal and external conditions alter. This is one of the most interesting findings of the case study on Italian industrial districts considered in this paper.

Further research would need to be undertaken to explore the concept of governance as a dynamic notion that can swing along the spectrum of its various forms as conditions change, as well as the link between firm size and forms of governance. In particular, it would be worthwhile looking at the shocks and conditions that prompts

processes of hierarchisation in local production systems. Finally, it would be worthwhile for further research to shed some light on the link between the governance of a cluster and the governance of the external networks it is able to develop.

Notes

1. Sacchetti and Sugden 2005a, 2005b.
2. On the link between innovation and the extent of inter-firm cooperation and networking, see De Propriis 2002.
3. See Putman (2000) on bonding relations and social capital.
4. See for instance Becattini 1990.
5. Markusen 1996.
6. Sugden 1997, Cowling and Sugden 1999.
7. For a discussion of the importance of diversity and heterogeneity, see Lagenijk and Oinas 2005.
8. For a discussion on the emergence of district groups, see Brioschi *et al.* 2004, Fortis 2004.
9. The increasing importance of medium-sized firms and the subsequent formation of groups were also witnessed outside industrial districts. For an analysis of the phenomenon inside and outside districts, see Cainelli *et al.* 2006.
10. For a discussion on the internationalisation of industrial districts see Tattara and Crestanello 2003.
11. Italy has 20 regions corresponding to EU NUTS 2.
12. The very limited number of cases of local labour markets located across two or more regions has been solved by applying the rule of the dominant region (the region where the highest number of municipalities that are included within the local labour market boundaries is located).
13. The use of processing trade data is becoming increasingly important in the analysis of the international fragmentation of production even in international economics, see for instance Egger and Egger (2005).

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